FCC ID: A3LWCF934M

MPE Calculation

Regulation(s): Part 1.1310, Part 2.1091

Method: KDB447498 D01v06

RF feature(Mode)	Frequency range (MHz)			Max Target Power (dBm)	ANT Gain (dBi)	Maximum EIRP (dBm)	Maximum EIRP (mW)	Maximum power density (mW/cm^2)	Requirement (mW/cm^2)
Bluetooth(BDR)	2 402.00	~	2 480.00	12.50	-2.07	10.43	11.041	0.002 2	1.000 0
Bluetooth(EDR)	2 402.00	~	2 480.00	10.00	-2.07	7.93	6.209	0.001 3	1.000 0
Bluetooth LE	2 402.00	~	2 480.00	12.50	-2.07	10.43	11.041	0.002 2	1.000 0
		~							
		~							
		~							
		~							
		~							

Note: Please refer to the operation description for Max tune-up power.

The EUT will only be used with a separation of 20 centimeters or greater between the antenna and the body of the user.

The MPE sample calculation for this exposure is shown below.

▪ **S =** $EIRP / (4 R^2 \pi)$

= $11.041 / (4 \times 20^2 \times \pi)$

= $0.002\ mW/cm^2$

- Note

S= Maximum power density(mW/cm^2)

EIRP= Equivalent Isotropic Radiated Power(mW)

R= Distance to the center of the radiation of the antenna(20cm)

Part 1.1310

▪ Limits for Maximum Permissible Exposure (MPE)

Frequency range (MHz)			Electric Field strength (V/m)	Magnetic field strength (A/m)	Power Density (mW/cm^2)	Averaging time (minutes)
0.3	~	1.34	614	1.63	*100	30
1.34	~	30	824/f	2.19 / f	$*180 / f^2$	30
30	~	300	27.5	0.073	0.2	30
300	~	1,500			f / 1500	30
1,500	~	100,000			1.0	30

Conclusion : The exposure condition of this device is compliant with FCC

FCC ID: A3LWCF934M

MPE Calculation

Regulation(s): Part 1.1310, Part 2.1091

Method: KDB447498 D01v06

RF feature(Mode)	Frequency range (MHz)			Max Target Power (dBm)	ANT Gain (dBi)	Maximum EIRP (dBm)	Maximum EIRP (mW)	Maximum power density (mW/cm^2)	Requirement (mW/cm^2)
802.11n(HT20)_MIMO	2 412.00	~	2 472.00	21.00	2.98	23.98	250.035	0.049 8	1.000 0
802.11ax(HE20)_MIMO	2 412.00	~	2 472.00	21.00	2.98	23.98	250.035	0.049 8	1.000 0
802.11n(HT20)_MIMO_5GHz	5 500.00	~	5 720.00	16.50	4.63	21.13	129.718	0.025 9	1.000 0
802.11ax(HE20)_MIMO_5GHz	5 180.00	~	5 240.00	16.00	4.63	20.63	115.612	0.023 1	1.000 0
802.11n(HT40)_MIMO_5GHz	5 510.00	~	5 710.00	19.00	4.63	23.63	230.675	0.045 9	1.000 0
802.11ax(HE40)_MIMO_5GHz	5 510.00	~	5 710.00	19.50	4.63	24.13	258.822	0.051 5	1.000 0
802.1ac(VHT80)_MIMO_5GHz	5 530.00	~	5 690.00	19.00	4.63	23.63	230.675	0.045 9	1.000 0
802.11ax(HE80)_MIMO_5GHz	5 530.00	~	5 690.00	20.00	4.63	24.63	290.403	0.057 8	1.000 0
802.11ax(HE20)_MIMO_6GHz	6 895.00	~	7 115.00	7.50	4.26	11.76	14.997	0.003 0	1.000 0
802.11ax(HE40)_MIMO_6GHz	6 885.00	~	7 085.00	9.50	4.26	13.76	23.769	0.004 8	1.000 0
802.11ax(HE80)_MIMO_6GHz	6 945.00	~	7 025.00	12.50	4.26	16.76	47.425	0.009 5	1.000 0

Note1: Please refer to the operation description for Max tune-up power.

Note2: The antenna gain applied the maximum antenna gain listed for each WiFi band.

The EUT will only be used with a separation of 20 centimeters or greater between the antenna and the body of the user.

The MPE sample calculation for this exposure is shown below.

▪ **S =** EIRP / (4 R^2 π)

= 250.035 / (4 X 20^2 X π)

= 0.050 mW/cm^2

- Note

S= Maximum power density(mW/cm^2)

EIRP= Equivalent Isotropic Radiated Power(mW)

R= Distance to the center of the radiation of the antenna(20cm)

Part 1.1310

▪ Limits for Maximum Permissible Exposure (MPE)

Frequency range (MHz)			Electric Field strength (V/m)	Magnetic field strength (A/m)	Power Density (mW/cm^2)	Averaging time (minutes)
0.3	~	1.34	614	1.63	*100	30
1.34	~	30	824/f	2.19 / f	*180 / f^2	30
30	~	300	27.5	0.073	0.2	30
300	~	1,500			f / 1500	30
1,500	~	100,000			1.0	30

Conclusion : The exposure condition of this device is compliant with FCC

RF Exposure Compliance for simultaneous operations

- **Worst case for simultaneous operations**
- WLAN(5GHz)_ANT0 + WLAN(2.4GHz)_ANT1

RF feature or mode	WLAN	WLAN	-	-	-	-	-	Σ of MPE ratios
Band(Worst case)	5GHz	2.4GHZ	-	-	-	-	-	
Power Density (mW/cm2)	0.057 8	0.049 8	-	-	-	-	-	
Requirement (mW/cm2)	1.000 0	1.000 0	-	-	-	-	-	
MPE ratio (Power Density/Requirement)	0.057 8	0.049 8	-	-	-	-	-	
Worst case(MPE ratio)	0.057 8	0.049 8	-	-	-	-	-	0.107 6

- **Requirment = Σ of MPE ratios ≤ 1**

Conclusion : The exposure condition of this device is compliant with FCC rules.